Final
Site-Specific Field Sampling Plan and Site-Specific Safety and Health Plan Attachments
Area 1600 Motor Pool
Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7)

Fort McClellan
Calhoun County, Alabama

Delivery Order CK05
Contract No. DACA21-96-D-0018
IT Project No. 774645

September 1999

Revision 1

Final
Site-Specific Field Sampling Plan Attachment
Site Investigation at the Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7)

Fort McClellan
Calhoun County, Alabama

Prepared for:

U.S. Army Corps of Engineers, Mobile District
109 St. Joseph Street,
Mobile, Alabama 36602

Prepared by:

IT Corporation
312 Directors Drive
Knoxville, Tennessee 37923

Delivery Order CK05
Contract No. DACA21-96-D-0018
IT Project No. 774645

September 1999

Revision 1

Table of Contents

Table of Contents *(Continued)*

Page

List of Tables

List of Figures

List of Acronyms

ADEM	Alabama Department of Environmental Management
ASTM	American Society for Testing and Materials
bgs	below ground surface
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
CLP	Contract Laboratory Procedure
CSEM	conceptual site exposure model
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
EPA	U.S. Environmental Protection Agency
ESE	Environmental Sciences and Engineering, Inc.
FTMC	Fort McClellan
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
MOGAS	motor gas
ND	not detected
NGVD	National Geodetic Vertical Datum
O&G	oil and grease
PID	photoionization detector
ppb	parts per billion
ppm	parts per million
PSSC	potential site-specific chemical
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and health plan
SI	site investigation

List of Acronyms *(Continued)*

SSHP	site-specific safety and health plan
TPH	total petroleum hydrocarbons
USACE	U.S. Army Corps of Engineers
UST	underground storage tank
UXO	unexploded ordnance
WP	installation-wide work plan

Executive Summary

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK05, IT Corporation (IT) will conduct site investigation activities at the Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7) 71(7), 503(7), and 504(7), at Fort McClellan (FTMC), Calhoun County, Alabama, to determine the presence or absence of potential site-specific chemicals at this site. The purpose of this site-specific field sampling plan (SFSP) is to provide technical guidance for sampling activities at the Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7).

The Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7) is located in the southeast area of the Main Post. The Area 1600 Motor Pool comprises approximately 11 acres and is a secure facility that is fenced and gated. The Area 1600 Motor Pool is located at the south end of 10th Avenue. The motor pool was active until 1998, but is currently inactive. Two wash areas, two grease racks, and one oil/water separator are located here, as is a repair "court." Light vehicle maintenance was conducted on large military vehicles, including cranes, roadway graders, water tank trucks and fuel tank trucks. Materials that were stored on site include diesel, motor gas (MOGAS), antifreeze, fog oil, and engine oil. The majority of the area at this site was designated for military vehicle parking.

The Equipment Concentration Site, Parcel 71(7), is located in the southwest corner of the site and is comprised of 2 grease racks and a wash area that includes a wash pad, a wash rack, and an oil/water separator (Figure 1-2). The wash area was originally built in 1942 and was equipped with a rotating skimmer type oil/water separator (Environmental Sciences and Engineering, Inc. [ESE], 1998). This facility was rebuilt in 1991 and now has a settling basin attached to a coalescing plate oil/water separator that discharges to the sanitary sewer (Roy F. Weston, Inc., 1990).

There is another wash rack located on the east side of the site near Building 1699 and southeast of Building 1689. There is not any information available on this wash rack.

There are five UST sites listed at the Area 1600 Motor Pool where tanks have been reportedly removed or closed in place. The following is a brief description of each of the UST sites:

- The Building 1696 waste oil underground storage tank (UST), Parcel 17(7), was closed in place and replaced in 1994. The 2,000-gallon waste oil UST was replaced by a 2,000-gallon UST.

- The Building 1697 waste oil UST, Parcel 18(7), was closed in place without replacement in 1994. The 2,000-gallon waste oil UST was installed in 1982.

- Two 10,000 gallon USTs, Parcel 19(7), were reportedly removed from the former FTMC gas station Building 1694 in 1991. The closure reports are not on file at FTMC or Alabama Department of Environmental Management (ADEM). Reportedly, IT removed the two 10,000-gallon USTs (a MOGAS tank and a diesel tank) on February 9, 1991 (IT, 1999). Building 1694 has been removed; however, the area in the northeast center of the site is the suspected location of the removed Building 1694 and the suspected location of the excavation for the removal of the two 10,000-gallon USTs.

- A suspected 500-gallon UST, Parcel 503(7), was reportedly removed at Building 1689. A work plan figure found in the IT file indicated the tank was originally located at the southeast end of Building 1689. A closure report is not available.

- An estimated 10,000 gallon UST, Parcel 504(7), was reportedly removed in February 1991 at Building 1693 (IT, 1999). A closure report is not available.

Specifically, IT will collect 29 surface soil samples, 29 subsurface soil samples, 14 groundwater samples, 2 surface water samples, 2 sediment samples, and 2 depositional soil samples at this site. Potential contaminant sources at the Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7), include petroleum products (e.g., gasoline, diesel, heating oil, waste oil, fog oil, antifreeze, and lubricants), solvents, and metals. Chemical analyses of the samples collected during the field program will include volatile organic compounds, semivolatile organic compounds, and metals. In addition, sediment samples will be analyzed for total organic carbon and grain size. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP) and regulatory agency guidelines.

The Area 1600 Motor Pool falls within the "Possible Explosive Ordnance Impact Areas" shown on Plate 10 of the FTMC Archive Search Report Maps, June, 1998; therefore, UXO surface sweeps and downhole surveys of soil borings will be required to support field activities at the Area 1600 Motor Pool. The surface sweeps and downhole surveys will be conducted to identify anomalies for the purposes of UXO avoidance.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) for the Area 1600 Motor Pool will be used in conjunction with the site-specific safety and health plan (SSHP), the WP, and the SAP. The SAP includes the installation-wide safety and health plan,

waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

1.0 Project Description

1.1 Introduction

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Area 1600 Motor Pool, Parcels 17(7), 18(7), 19(7), 71(7), 503(7) and 504(7), under Delivery Order CK05, Contract No. DACA21-96-D-0018.

This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance for sample collection and analysis at the Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7). This SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7) site, and the installation-wide work plan (WP) (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan (SHP), waste management plan, and quality assurance plan (QAP). Site-specific hazard analyses are included in the SSHP.

1.2 Site Description

The Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7), is located in the southeast area of the Main Post (Figure 1-1). The Area 1600 Motor Pool comprises approximately 11 acres and is a secure facility that is fenced and gated. The Area 1600 Motor Pool is located at the south end of 10th Avenue (Figure 1-2). The motor pool was active until 1998, but is currently inactive. Two wash areas, two grease racks, and one oil/water separator are located at this site, as is a repair "court." Light vehicle maintenance was conducted on large military vehicles, including cranes, roadway graders, water tank trucks, and fuel tank trucks. Materials that were stored on site include diesel, motor gas (MOGAS), antifreeze, fog oil, and engine oil. The majority of the area at this site was designated for military vehicle parking. The Area 1600 Motor Pool contains several buildings or facilities that are identified in Table 1-1.

The Equipment Concentration Site, Parcel 71(7) is located in the southwest corner of the site and is comprised of 2 grease racks and 1 wash area that includes a wash pad, a wash rack, and an

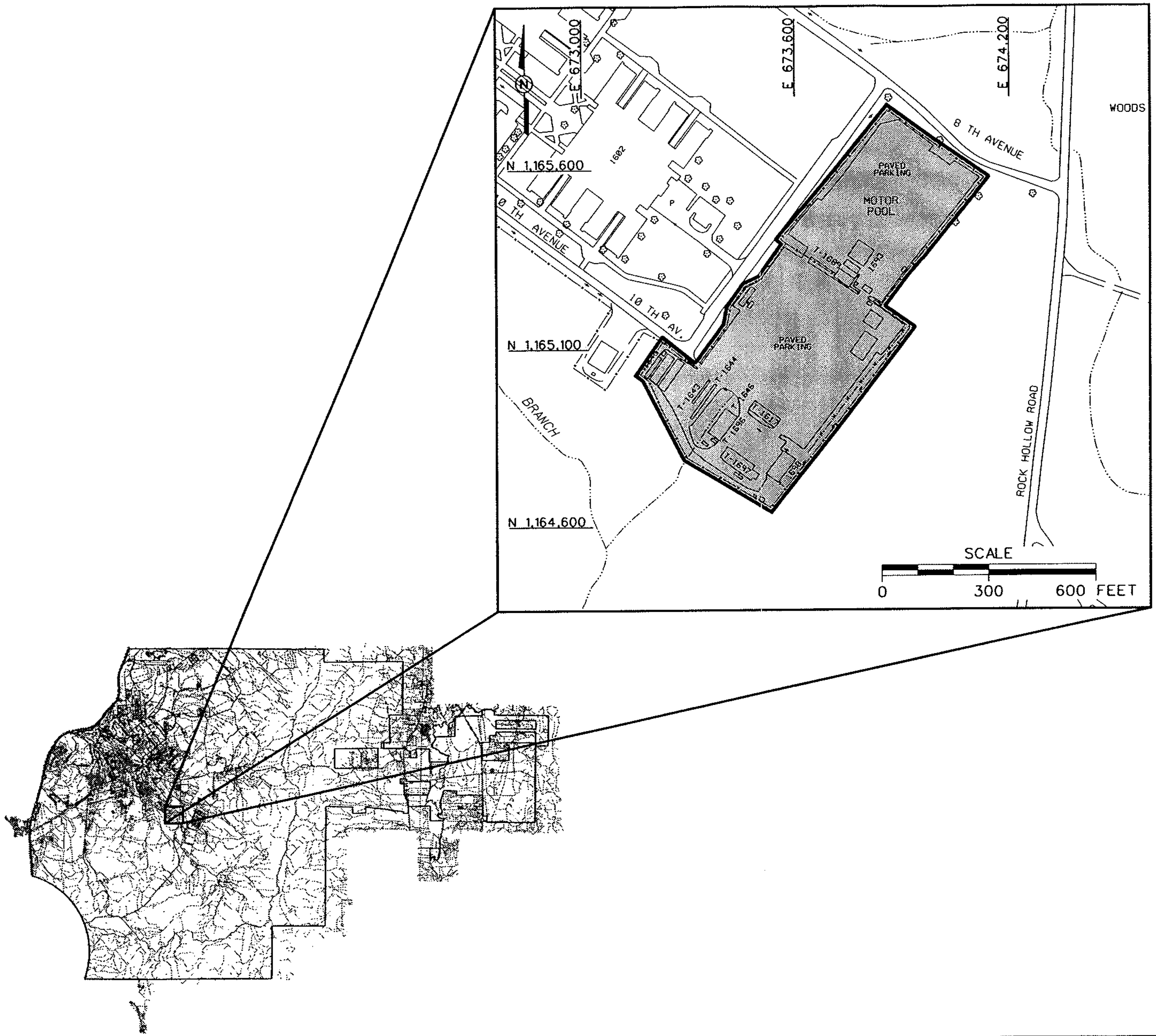


FIGURE 1-1
SITE LOCATION MAP
AREA 1600 MOTOR POOL
PARCELS 163(7), 17(7), 18(7), 19(7), 71(7), 503(7) AND 504(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

IT CORPORATION
A Member of The IT Group

STARTING DATE: 04/12/99 | DATE LAST REV.: | DRAFT. CHCK. BY: | INITIATOR: J. RAGSDALE | DWG. NO.: ...\774645es.266
DRAWN BY: D. BILLINGSLEY | DRAWN BY: | ENGR. CHCK. BY: J. RAGSDALE | PROJ. MGR.: J. YACOUB | PROJ. NO.: 774645

08 JUN 1999 13:49:14
DBILLING c:\cadd\design\774645es.266

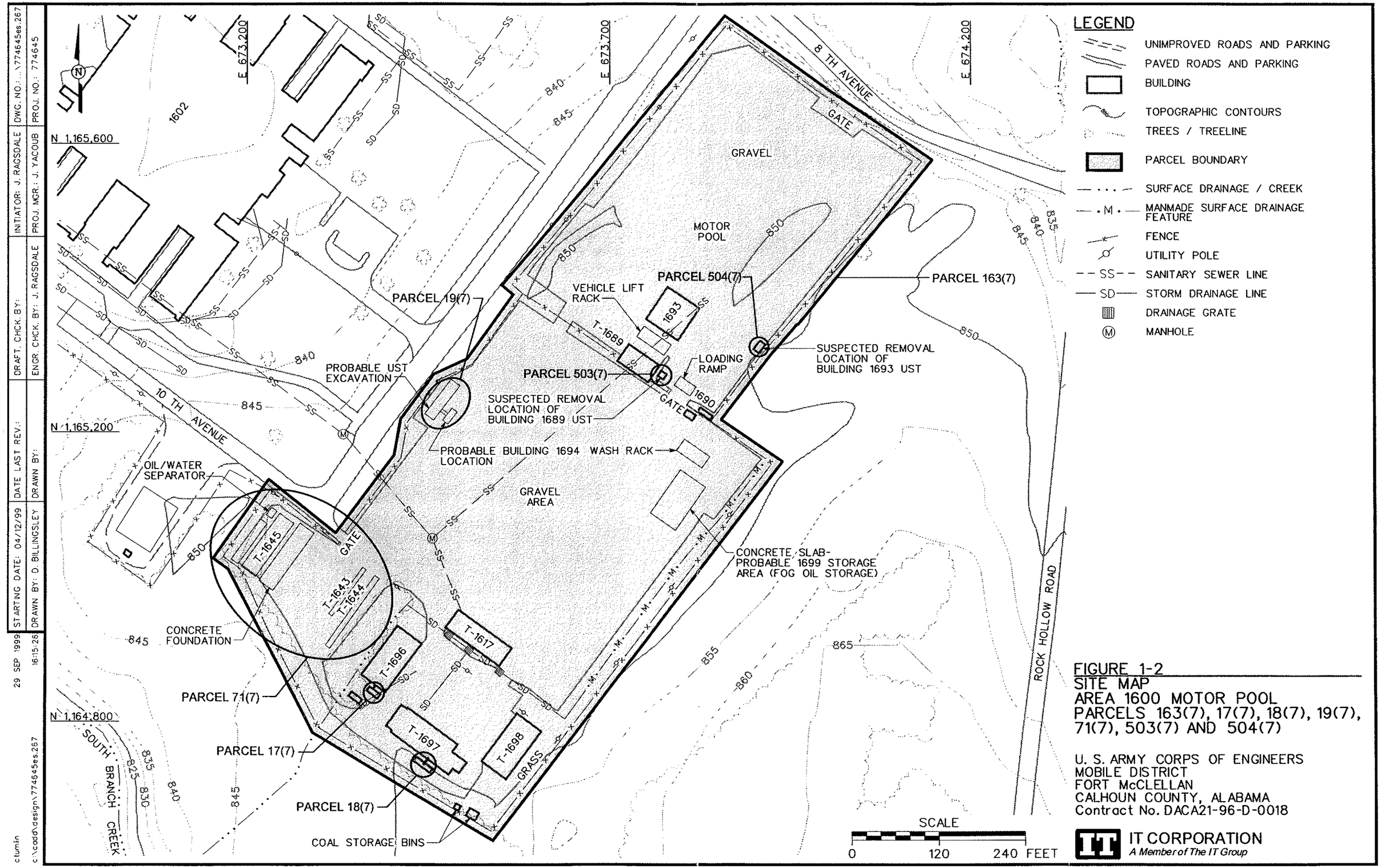


FIGURE 1-2
SITE MAP
AREA 1600 MOTOR POOL
PARCELS 163(7), 17(7), 18(7), 19(7), 71(7), 503(7) AND 504(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

IT CORPORATION
A Member of The IT Group

DRAFT. CHCK. BY:
ENGR. CHCK. BY: J. RAGSDALE
DRAWN BY: D. BILLINGSLEY
DATE LAST REV.: 29 SEP 1999
STARTING DATE: 04/12/99
INITIATOR: J. RAGSDALE
PROJ. MGR.: J. YACOUB
PROJ. NO.: 774645
DWG. NO.: ...\774645es.267
DRAWN BY: 16:15:26
c:\caddv\design\774645es.267
c:\umin

Table 1-1

Buildings Located at the Area 1600 Motor Pool
Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7)
Fort McClellan, Calhoun County, Alabama

Building No.[a]	Building Description	See Figure No.	Year Built	Parcel No.
1617	Motor Pool Administration Office Building	1-2	1941	163(7)
1643	Grease Rack	1-2	1942	71(7)
1644	Grease Rack	1-2	1942	71(7)
1645	Wash Area/Oil/Water Separator	1-2	1942	71(7)
1689	Vehicle Maintenance Building	1-2	1941	503(7)
1690	Loading Dock and Ramp	1-2	1982	163(7)
1693	Storage Building	1-2	1984	504(7)
1694	Former Gas Station Building	1-2	not listed	19(7)
1696	Vehicle Maintenance Shop	1-2	1941	17(7)
1697	Storage Building	1-2	1941	18(7)
1698	Vehicle Maintenance Building	1-2	1987	163(7)
1699	Open Storage Area (Concrete Pad)	1-2	1983	163(7)

[a]*Environmental Science and Engineering, Inc. (ESE), 1998, Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

oil/water separator (Figure 1-2). The wash area was built in 1942 and was equipped with a rotating skimmer type oil/water separator (Environmental Science and Engineering, Inc. [ESE], 1998). This facility was rebuilt in 1991 and now has a settling basin attached to a coalescing plate oil/water separator that discharges to the sanitary sewer (Roy F. Weston, Inc., 1990).

Also there is another wash rack located on the east side of the site near Building 1699 and southeast of Building 1689. There is not any information available on this washrack.

The Building 1696 waste oil underground storage tank (UST), Parcel 17(7), was closed in place and replaced in 1994. The 2,000-gallon waste oil UST was replaced by a 2,000-gallon UST. The Building 1697 waste oil UST, Parcel 18(7), was closed in place without replacement in 1994. The Building 1697 2,000-gallon waste oil UST was installed in 1982. Further discussion on the Buildings 1696 and 1697 UST closures are provided in Chapter 2.0.

Two 10,000-gallon USTs, Parcel 19(7), were reportedly removed from the former FTMC gas station Building 1694 in 1991. The closure reports are not on file at FTMC or Alabama Department of Environmental Management (ADEM). Twelve locations on FTMC have been identified during the environmental baseline survey (EBS) as former gas station locations (ESE, 1998). These FTMC gas stations were constructed in 1941 and are associated with former motor pool areas. The gas station buildings were of like construction, consisting of a 9-by-21-foot concrete foundation with corrugated steel walls. Two fuel pumps were located on an island directly in front of each building, approximately 20 feet away. The original plans called for two 10,000-gallon tanks at each building (ESE, 1998). Building 1694 reportedly matched this description, but has been removed and the status of this potential UST site is unknown. Further discussion on the Building 1694 UST investigation is provided in Chapter 2.0.

A suspected UST, Parcel 503(7), without a closure report on file was located at Building 1689. A removal work plan figure located in the IT files shows the UST was located at the southeast end of building 1689 (Figure 1-2). The size of the tank is listed in the figure notes is 500 gallons. In January 1991, the suspected UST location was excavated; however, a tank was not found (IT, 1999). Additional sampling was not performed and the excavated area was backfilled. It may be possible that this tank was removed prior to 1990 and the analytical results have detected residual contamination from the UST. Further discussion on the investigation of the suspected UST closure at Building 1689 is provided in Chapter 2.0.

An estimated 10,000-gallon UST, Parcel 504(7), without a closure report was reportedly located at Building 1693 (IT, 1999). A UST removal workplan figure located in the IT files shows the UST for Building 1693 was located east of the building next to the motor pool fence. The workplan figure notes estimate the size of the tank to be 10,000 gallons. The UST was reportedly removed in February 1991. Further discussion on the investigation of the suspected UST at Building 1693 is provided in Chapter 2.0.

The elevation of the site is approximately 850 feet (National Geodetic Vertical Datum [NGVD] of 1929). Surface water appears to drain to the southwest. Local shallow groundwater direction at the site is probably controlled by topography; therefore, groundwater direction in the residuum is likely to the southwest, toward the South Branch of Cane Creek.

Soils at the Area 1600 Motor Pool consist of the Anniston and Allen Series. The Anniston and Allen Series of soils consists of strongly acid, deep, well-drained soils that have developed in old local alluvium. The parent material washed from the adjacent higher-lying Linker, Muskingum, Enders, and Montevallo soils, which developed from weathered sandstone, shale, and quartzite. Sandstone and quartzite gravel and cobbles, as much as 8 inches in diameter, are on the surface and throughout the soil.

Soils at this site fall into the Anniston and Allen gravelly loams, 6 to 10 percent slopes, eroded (AcC2) (U.S. Department of Agriculture, 1961). Some severely eroded areas may be common on the surface for this soil type, as well as a few shallow gullies. The depth to bedrock ranges from 2 feet to greater than 10 feet. The typical soil description is 2 to 10 feet of well-drained stony loam to clay loam over stratified local alluvium, limestone or shale bedrock. The depth to the water table is likely greater than 20 feet.

This mapping unit consists of friable soils that have developed in old alluvium on foot slopes and along the base of mountains. The color of the surface soil ranges from very dark brown and dark brown to reddish brown and dark reddish brown. The texture of subsoil ranges from light clay loam to clay or silty clay loam. The alluvium ranges in thickness from 2 to more than 8 feet. Infiltration and runoff are medium, permeability is moderate, and the capacity for available moisture is high. Organic matter is moderately low.

1.3 Scope of Work

The scope of work for activities associated with the SI at the Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7), as specified by the statement of work (USACE, 1999), includes the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Conduct a surface and near-surface unexploded ordnance (UXO) survey over all areas to be included in the supplemental sampling effort.
- Provide downhole UXO support for all intrusive drilling to determine buried downhole hazards.
- Collect 29 surface soil samples, 29 subsurface soil samples, 14 groundwater samples, 2 surface water samples, 2 sediment samples, and 2 depositional soil samples to determine whether potential site-specific chemicals (PSSC) are present at the Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7) site and to provide data useful for supporting any future planned corrective measures and closure activities.
- Samples will be analyzed for the parameters listed in Section 4.5.

The Area 1600 Motor Pool falls within the "Possible Explosive Ordnance Impact Areas" shown on Plate 10 of the FTMC Archive Search Report Maps, June, 1998; therefore, UXO surface sweeps and downhole surveys of soil borings will be required to support field activities at this site. The surface sweeps and downhole surveys will be conducted to identify anomalies for the purposes of UXO avoidance.

At completion of the field activities and sample analyses, draft and final SI summary reports will be prepared to evaluate the absence or presence of PSSCs at this site, and to recommend further actions, if appropriate.

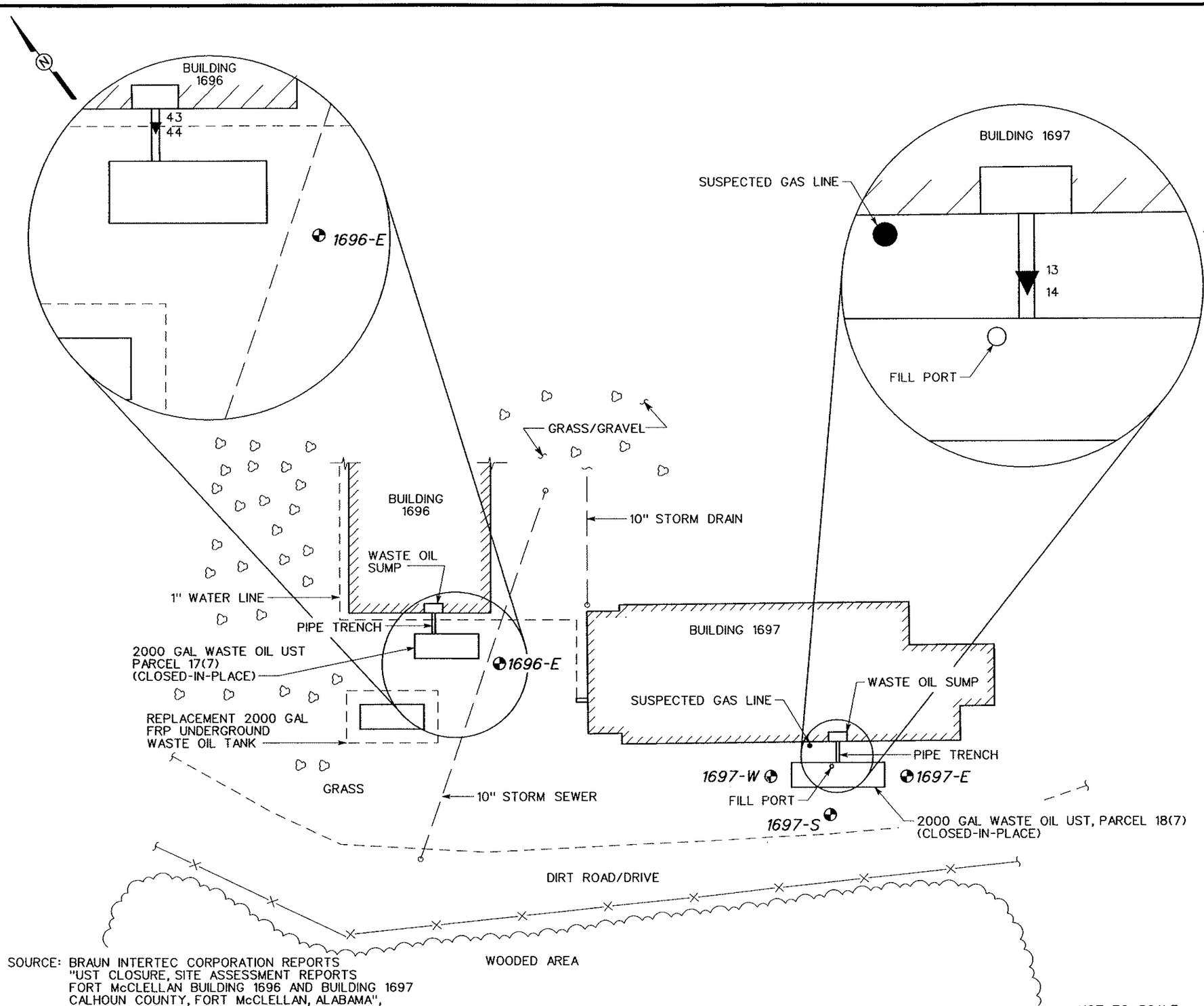
2.0 Summary of Existing Environmental Studies

An EBS was conducted by ESE to document current environmental conditions of all FTMC property (ESE, 1998). The study was to identify sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance for fast-track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria.

1. Areas where no storage, release, or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA) (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, ADEM, U.S. Environmental Protection Agency (EPA) Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels.

The 2,000-gallon waste oil UST, Parcel 17(7), at Building 1696 was closed in place and replaced April 29, 1994 (Braun, 1995a). The waste oil UST was located at the southwest end of Building 1696 (Figure 2-1). The 2,000-gallon waste oil UST was replaced by a 2,000-gallon UST. Waste oil was placed in a sump on the southwest wall of Building 1696 and gravity-fed through an



LEGEND

- SOIL BORING LOCATION
- 43 / 44 — LAB ID NO. - "A" & "B" SAMPLES
- UNIMPROVED ROADS AND PARKING
- TREES / TREELINE
- FENCE

SOURCE: BRAUN INTERTEC CORPORATION REPORTS "UST CLOSURE, SITE ASSESSMENT REPORTS FORT McCLELLAN BUILDING 1696 AND BUILDING 1697 CALHOUN COUNTY, FORT McCLELLAN, ALABAMA", FEBRUARY 1995.

NOT TO SCALE

FIGURE 2-1
BUILDINGS 1696 AND 1697 USTs
AREA 1600 MOTOR POOL
PARCELS 17(7) AND 18(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

IT CORPORATION
A Member of The IT Group

DRAFT. CHCK. BY:
ENGR. CHCK. BY: J. RAGSDALE
INITIATOR: J. RAGSDALE
PROJ. MGR.: J. YACOUB
DRAWN BY: D. BILLINGSLEY
DWG. NO.: ...\774645es 285
PROJ. NO.: 774645
DATE LAST REV.:
STARTING DATE: 05/14/99
DRAWN BY:
15 SEP 1999
08:44:50
c:\cadd\design\774645es.285
DBILLNG

underground polyvinyl chloride (PVC) pipe to the waste oil UST. The PVC piping extending approximately 7 feet to the UST was also removed. The UST was constructed of single-wall steel and there were not any holes observed from the interior of the tank. The tank was filled with a concrete slurry.

One soil boring was completed southeast of the closed-in-place UST (Figure 2-1). This boring was drilled to a depth of 15.5 feet bgs. A soil sample (1696-E) was collected at 7.5 feet bgs for analysis. Also, samples from the pipe trench were submitted for analysis. The soil samples collected at the site were analyzed for TPH and total lead. High concentrations of TPH were detected in the pipe trench (Pipe Trench "A" and "B"), but TPH was not detected on the east side (1696-E) of the UST. There were not any soil samples collected on the north, south, or west sides of the UST. The soil boring drilled to the depth of 15.5 feet bgs did not encounter groundwater, therefore, there was not any groundwater sampling conducted at this site (Braun, 1995a). Table 2-1 lists the sample results for the closure of Building 1696 waste oil UST. The closure report concluded that a petroleum release had occurred on site from the results of the samples collected beneath the waste oil sink drain piping to the UST and from the soils excavated above the UST (Braun, 1995a). Also, the closure report concluded that the vertical and horizontal extent of contamination in the soil had not been determined.

The 2000-gallon waste oil UST, Parcel 18(7), at Building 1697 was closed in place without replacement May 2, 1994 (Braun, 1995a). The 2,000-gallon waste oil UST was located on the southwest side of building and was installed in 1982 (Figure 2-1). Waste oil was placed in a sump on the southwest wall of Building 1697 and gravity-fed through an underground PVC pipe to the waste oil tank. The PVC piping extending approximately 7 feet to the UST was also removed. The UST was construct of single-wall steel and there were not any holes observed from the interior of the tank. The tank was filled with a concrete slurry.

Three soil borings (labeled 1697-E, 1697-S, and 1697-W) were drilled on three sides of the UST at Building 1697 (Figure 2-1). The borings were extended to the depth near the assumed bottom of the UST. One additional boring (labeled 1696-E) was completed approximately 70 feet to the west during the in-place closure of the 2000-gallon UST at Building 1696. Groundwater was not encountered in the soil borings completed at Building 1697 or in soil Boring 1696-E at Building 1696 (Braun, 1995b). Therefore, there was not any groundwater sampling conducted at this site.

The soil samples collected from the east, south, and west sides of the UST excavation, and from the pipe trench were analyzed for TPH and total lead. The sample results for the waste oil UST

Table 2-1

Sample Data[a] for the Closure In Place of the 2000-Gallon Waste Oil UST at Building 1696, Parcel 17(7) Fort McClellan, Calhoun County, Alabama

Sampling Task	Sample Number	Sample Location Sample Description	Sample Date	Vertical Sample Depth (feet)	Analytical Parameters	
					Total Lead (ppm)[b]	TPH[c] (ppm)
Samples collected at UST closure in place	94-0431-08	Boring 1696-E	4/28/94	7.5	39	< 5
	94-0431-43	Pipe trench "A"	4/28/94	2.0	44	1200
	94-0431-44	Pipe trench "B"	4/28/94	4.0	5	105
	94-0431-46	Spoil Pile	4/29/94	NA	7	1,550

[a]Braun Intertec Corporation, 1995, *UST Closure, Site Assessment Report, Fort McClellan Building 1696, Calhoun County, Fort McCellan, Alabama*, February.

[b]ppm - Parts per million.

[c]Total petroleum hydrocarbon compounds (EPA Method 418.1).

NA - Not applicable.

Table 2-2

Sample Data[a] for the Closure In Place of the 2000-Gallon Waste Oil UST at Building 1697, Parcel 18(7) Fort McClellan, Calhoun County, Alabama

Sampling Task	Sample Number	Sample Location Sample Description	Sample Date	Vertical Sample Depth (feet)	Analytical Parameters	
					Total Lead (ppm)[b]	TPH[c] (ppm)
Samples collected at UST closure in place	94-0431-09	Boring 1697-E	4/25/94	7.5	15	< 5
	94-0431-10	Boring 1697-S	4/25/94	7.5	8.2	< 5
	94-0431-11	Boring 1697-W	5/20/94	7.5	7.7	10
	94-0452-13	Pipe trench "A"	5/20/94	2.0	37	3300
	94-0452-14	Pipe trench "B"	5/20/94	4.0	75	4,200

[a]Braun Intertec Corporation, 1995, *UST Closure, Site Assessment Report, Fort McClellan Building 1697, Calhoun County, Fort McCellan, Alabama*, February.

[b]ppm - Parts per million.

[c]Total petroleum hydrocarbon compounds (EPA Method 418.1).

at Building 1697 are listed in Table 2-2. TPH concentrations in the east and south side samples were at or below detection limit. The west side soil sample (1697-W) was slightly above detection limits for TPH. The pipe trench samples (Pipe Trench "A" and "B") showed very high concentrations of TPH. The closure report concluded that a petroleum release had occurred on site and that the vertical and horizontal extent of contamination in the soil had not been determined (Braun, 1995b).

Two 10,000 gallon USTs, Parcel 19(7), were reportedly removed from the former FTMC gas station Building 1694 in 1991. The closure reports for these USTs are not on file at FTMC or ADEM and may not have been required at the time of closure (EBS, 1998). Twelve locations on FTMC have been identified during the EBS as former gas stations. These gas stations were constructed in 1941 and are associated with former motor pool areas on FTMC. The buildings were of like construction, consisting of a 9-by-21-foot cement foundation and corrugated steel walls. Two fuel pumps were located on an island directly in front of each building, approximately 20 feet away. The original FTMC gas station plans called for two 10,000-gallon tanks at each building (ESE, 1998).

Reportedly, IT removed the two 10,000-gallon USTs (a MOGAS tank and a diesel tank) on February 9, 1991 (IT, 1999). Building 1694 has been removed; however, the area in the northeast center of the site is the suspected location of the removed Building 1694 and the suspected location of the excavation for the removal of the two 10,000 gallon USTs (Figure 1-2). Six soil borings were installed around the perimeter of the tanks prior to closure (IT, 1999). The locations of the soil borings were not available. The soil samples were submitted for analysis and the sample results are listed in Table 2-3. Soil sample results for O&G analyses ranged from ND to 1100 ppm. Soil samples collected at 18 to 20 feet bgs contained significant O&G concentrations (IT, 1999). The depth to groundwater was not noted.

A suspected UST, Parcel 503(7), at Building 1689 did not have a closure report (IT, 1999). However, a removal workplan figure found in the IT files shows the UST was located at the southeast end of Building 1689 (Figure 1-2). The size of the tank listed in the figure notes was 500 gallons. In December of 1990, IT completed six soil borings around a suspected UST site. The soil samples were analyzed for total lead and TPH (IT, 1999). The locations of the soil borings are not available. The sample results show that the total lead concentrations ranged from 0.82 to 140 ppm (Table 2-3). O&G concentrations ranged from ND to 580,000 ppm. The depth to groundwater was not referenced in the field notes reviewed. A benzene concentration of 140 ppb was detected at a depth of 8 to 10 feet bgs in Boring No. 6 (Table 2-3). In January 1991, the

Table 2-3

Sample Data for UST Closure Investigations at Buildings 1694, 1689, and 1693, Parcels 19(7), 503(7), and 504(7) Fort McClellan, Calhoun County, Alabama

Building No.	Sample ID No.	Sample Location	Sample Date	Lead-TCLP (mg/L)	Lead-Total (mg/kg)	O&G-9071 (mg/kg)	Benzene (µg/kg)	Ethyl Benzene (µg/kg)	Toluene (µg/kg)	Xylene (µg/kg)
Parcel No. 19(7)										
1694	P8030	Boring-1 0'-2'	12/13/90	NA	15	200	ND(50)	ND(50)	ND(50)	ND(50)
1694	P8031	Boring-1 8'-10'	12/13/90	NA	6.8	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)
1694	P8032	Boring-1 18'-20'	12/13/90	NA	13	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)
1694	P8027	Boring-2 0'-2'	12/13/90	NA	7.9	300	ND(50)	ND(50)	ND(50)	ND(50)
1694	P8028	Boring-2 8'-10'	12/13/90	NA	6.2	220	ND(50)	ND(50)	ND(50)	ND(50)
1694	P8029	Boring-2 18'-20'	12/13/90	NA	33	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)
1694	P8033	Boring-3 0'-2'	12/14/90	NA	10	180	ND(1)	ND(1)	ND(1)	ND(1)
1694	P8034	Boring-3 8'-10'	12/14/90	NA	9.8	620	ND(1)	ND(1)	ND(1)	ND(1)
1694	P8035	Boring-3 18'-20'	12/14/90	NA	20	840	ND(1)	ND(1)	ND(1)	ND(1)
1694	P8036	Boring-4 0'-2'	12/14/90	NA	12	1700	ND(1)	ND(1)	ND(1)	ND(1)
1694	P8037	Boring-4 8'-10'	12/14/90	NA	12	440	ND(1)	ND(1)	ND(1)	ND(1)
1694	P8038	Boring-4 18'-20'	12/14/90	NA	46	1100	ND(1)	ND(1)	ND(1)	ND(1)
1694	P8039	Boring-5 0'-2'	12/14/90	NA	24	610	ND(1)	ND(1)	ND(1)	ND(1)
1694	P8040	Boring-5 8'-10'	12/14/90	NA	20	300	ND(1)	ND(1)	ND(1)	ND(1)
1694	P8041	Boring-5 18'-20'	12/14/90	NA	14	1100	ND(1)	ND(1)	ND(1)	ND(1)
1694	P8042	Boring-6 0'-2'	12/14/90	NA	16	630	ND(1)	ND(1)	ND(1)	ND(1)
1694	P8043	Boring-6 8'-10'	12/14/90	NA	14	510	ND(1)	ND(1)	ND(1)	ND(1)
1694	P8044	Boring-6 18'-20'	12/14/90	NA	14	210	ND(1)	ND(1)	ND(1)	ND(1)
1694	C4351	NW of tank hole	2/8/91	ND(0.25)	12	570	ND(1)	ND(1)	ND(1)	ND(1)
1694	C4352	NE of tank hole	2/8/91	ND(0.15)	9	300	ND(1)	ND(1)	ND(1)	ND(1)
1694	C4353	SW of tank hole	2/9/91	0.26	13	600	ND(1)	ND(1)	ND(1)	ND(1)
1694	C4354	Center of tank hole	2/9/91	ND(0.25)	13	310	ND(1)	ND(1)	ND(1)	ND(1)
1694	C4355	N wall of tank hole	2/9/91	ND(0.25)	17	690	ND(1)	ND(1)	ND(1)	ND(1)
1694	C4356	S wall of tank hole	2/9/91	ND(0.25)	12	470	ND(1)	ND(1)	ND(1)	ND(1)
1694	C4357	E wall of tank hole	2/9/91	ND(0.25)	12	340	ND(1)	ND(1)	ND(1)	ND(1)
1694	C4358	W wall of tank hole	2/9/91	ND(0.25)	30	590	ND(1)	ND(1)	ND(1)	ND(1)
1694	C4359	SE wall of tank hole	2/11/91	ND(0.25)	83	290	ND(1)	ND(1)	ND(1)	ND(1)

Table 2-3

Sample Data for UST Closure Investigations at Buildings 1694, 1689, and 1693, Parcels 19(7), 503(7), and 504(7) Fort McClellan, Calhoun County, Alabama

Building No.	Sample ID No.	Sample Location	Sample Date	Lead-TCLP (mg/L)	Lead-Total (mg/kg)	O&G-9071 (mg/kg)	Benzene (µg/kg)	Ethyl Benzene (µg/kg)	Toluene (µg/kg)	Xylene (µg/kg)
Parcel No. 503(7)										
1689	P8006	Boring-1 6'-8'	2/12/90	NA	140	61	1.8	ND(1)	ND(1)	ND(1)
1689	P8007	Boring-1 14'-16'	2/12/90	NA	26	64	1.4	ND(1)	ND(1)	ND(1)
1689	P8008	Boring-1 18'-20'	2/12/90	NA	25	55	2.1	ND(1)	ND(1)	ND(1)
1689	P8009	Boring-2 2'-4'	2/12/90	NA	32	65	ND(1)	ND(1)	ND(1)	1
1689	P8010	Boring-2 8'-10'	2/12/90	NA	26	ND(50)	ND(1)	ND(1)	ND(1)	1
1689	P8011	Boring-2 18'-20'	2/12/90	NA	19	58	1.8	2.4	ND(1)	ND(1)
1689	P8015	Boring-3 0'-2'	12/13/90	NA	41	490	ND(1)	ND(1)	ND(1)	ND(1)
1689	P8016	Boring-3 8'-10'	12/13/90	NA	11	1100	ND(1)	ND(1)	ND(1)	ND(1)
1689	P8017	Boring-3 18'-20'	12/13/90	NA	12	ND(50)	4.1	ND(1)	ND(1)	ND(1)
1689	P8018	Boring-4 0'-2'	12/13/90	NA	15	ND(50)	ND(1)	ND(1)	ND(1)	ND(1)
1689	P8019	Boring-4 8'-10'	12/13/90	NA	9.9	670	1.5	ND(1)	ND(1)	ND(1)
1689	P8020	Boring-4 18'-20'	12/13/90	NA	21	130	ND(1)	ND(1)	ND(1)	ND(1)
1689	P8021	Boring-5 0'-2'	12/13/90	NA	0.82	71	ND(1)	ND(1)	ND(1)	ND(1)
1689	P8022	Boring-5 8'-10'	12/13/90	NA	19	580,000	ND(1)	ND(1)	ND(1)	ND(1)
1689	P8023	Boring-5 18'-20'	12/13/90	NA	14	86	40	ND(1)	ND(1)	ND(1)
1689	P8024	Boring-6 0'-2'	12/13/90	NA	8.8	ND(50)	ND(1)	ND(1)	ND(1)	ND(1)
1689	P8025	Boring-6 8'-10'	12/13/90	NA	22	ND(50)	140	ND(1)	1.2	3.5
1689	P8026	Boring-6 18'-20'	12/13/90	NA	17	ND(50)	ND(1)	ND(1)	ND(1)	ND(1)

Table 2-3

Sample Data for UST Closure Investigations at Buildings 1694, 1689, and 1693, Parcels 19(7), 503(7), and 504(7) Fort McClellan, Calhoun County, Alabama

Building No.	Sample ID No.	Sample Location	Sample Date	Lead-TCLP (mg/L)	Lead-Total (mg/kg)	O&G-9071 (mg/kg)	Benzene (µg/kg)	Ethyl Benzene (µg/kg)	Toluene (µg/kg)	Xylene (µg/kg)
Parcel No. 504(7)										
1693	P8045	Boring-1 0'-2'	12/14/90	NA	10	470	ND(1)	ND(1)	ND(1)	ND(1)
1693	P8046	Boring-1 8'-10'	12/14/90	NA	7.9	210	ND(1)	ND(1)	ND(1)	ND(1)
1693	P8047	Boring-1 18'-20'	12/14/90	NA	16	910	ND(1)	ND(1)	ND(1)	ND(1)
1693	P8048	Boring-2 0'-2'	12/14/90	NA	34	62	ND(1)	ND(1)	ND(1)	ND(1)
1693	P8049	Boring-2 8'-10'	12/14/90	NA	24	690	ND(1)	ND(1)	ND(1)	ND(1)
1693	P8050	Boring-2 18'-20'	12/14/90	NA	15	1300	ND(1)	ND(1)	ND(1)	ND(1)
1693	P8051	Boring-3 0'-2'	12/14/90	NA	12	390	ND(1)	ND(1)	ND(1)	ND(1)
1693	P8052	Boring-3 8'-10'	12/14/90	NA	14	ND(50)	ND(1)	ND(1)	ND(1)	ND(1)
1693	P8053	Boring-3 18'-20'	12/14/90	NA	8.3	ND(50)	ND(1)	ND(1)	1.4	2.6
1693	P8090	Boring-4 0'-2'	12/17/90	NA	13	ND(50)	ND(1)	ND(1)	ND(1)	ND(1)
1693	P8091	Boring-4 8'-10'	12/17/90	NA	22	ND(50)	ND(1)	ND(1)	ND(1)	ND(1)
1693	P8092	Boring-4 18'-20'	12/17/90	NA	120	2000	ND(1)	ND(1)	ND(1)	ND(1)
1693	P8093	Boring-5 0'-2'	12/17/90	NA	15	1300	ND(1)	ND(1)	ND(1)	ND(1)
1693	P8094	Boring-5 8'-10'	12/17/90	NA	12	780	ND(1)	ND(1)	ND(1)	ND(1)
1693	P8095	Boring-5 18'-20'	12/17/90	NA	15	560	2.2	ND(1)	5.4	4.1
1693	P8096	Boring-6 0'-2'	12/17/90	NA	12	ND(50)	ND(1)	ND(1)	ND(1)	ND(1)
1693	P8097	Boring-6 8'-10'	12/17/90	NA	20	370	ND(1)	ND(1)	ND(1)	ND(1)
1693	P8098	Boring-6 18'-20'	12/17/90	NA	21	420	ND(1)	ND(1)	ND(1)	ND(1)
1693	C4339	NW of tank hole	2/7/91	ND(0.25)	26	820	84	620	ND(1)	840
1693	C4340	SW of tank hole	2/7/91	ND(0.25)	16	660	ND(1)	1.7	ND(1)	4.6
1693	C4341	E of tank hole	2/7/91	ND(0.25)	25	2600	ND(1)	ND(1)	ND(1)	ND(1)
1693	C4334	S wall of tank pit	2/6/91	ND(0.25)	18	710	ND(1)	ND(1)	ND(1)	ND(1)
1693	C4335	E wall of tank pit	2/6/91	ND(0.25)	17	330	ND(1)	ND(1)	ND(1)	ND(1)
1693	C4336	N wall of tank pit	2/6/91	ND(0.25)	14	ND(50)	ND(1)	ND(1)	ND(1)	ND(1)
1693	C4337	W wall of tank pit	2/7/91	ND(0.25)	18	160	ND(1)	ND(1)	ND(1)	ND(1)
1693	C4338	Center of tank pit	2/7/91	ND(0.25)	17	290	ND(1)	ND(1)	ND(1)	ND(1)

mg/kg - Milligrams per kilogram - parts per million (ppm).
mg/L - Milligram per liter - ppm.
NA - Data not available.
ND ( ) - Not detected at reporting limit listed in parenthesis.
O&G - Oil and grease analysis EPA Method 9071.
TCLP - Toxicity characteristic leaching procedure.
µg/kg - Microgram per kilogram - parts per billion (ppb).

area of the suspected UST was excavated; however, a tank was not found. Additional sampling was not performed and the excavated area was backfilled. The location of the excavation is not available. It is possible that this tank was removed prior to 1990 and the analytical results have detected residual contamination remaining from the UST.

Another reported UST, Parcel 504(7), at Building 1693 did not have a closure report (IT, 1999). A UST removal workplan figure found in the IT files shows the UST for Building 1693 was located east of Building 1693 next to the motor pool fence. The figure notes estimated the UST size to be 10,000 gallons. The UST was reportedly removed in February 1991. Prior to the tank removal, IT completed six soil borings and collected soil samples for total lead and TPH analyses in December 1990 (IT, 1999). The soil boring sample results are listed in Table 2-3. The sample results indicate that total lead concentrations ranged from 10 to 120 ppm. O&G concentrations from the soil boring samples ranged from ND to 2,000 ppm. Reportedly, upon the removal of the UST, the four sides and bottom of the excavation were sampled and analyzed. The excavation soil sample results are listed in Table 2-3. O&G concentrations from the excavation ranged from ND to 710 ppm. Soils that exhibited signs of contamination were excavated and transported to an area on site for incineration (IT, 1999). The depth to groundwater was not identified with the UST sample results.

In January 1999, the On-Site Resident USACE office videotaped the interior of the eight-inch main sanitary sewer line that transects the lower southwest section of the site (Stokes, 1999). The video taping was an on-going investigation of the sanitary sewer lines at Fort McClellan. Lateral connecting sanitary sewer lines at the site were not video taped because the lines were too small for the camera. The results of the video taping indicated that there were fractures and root intrusions in the sewer line. Also an oily sludge appeared to be prominent throughout the sewer line at the site. It was suspected that either the sewer line was used to dispose of oily wastes or the oil/water separator was leaking. Further investigation will be conducted by placing sample locations along the sewer line and near the oil/water separator to determine if soil or groundwater has been impacted from the potentially oil sludge observed in the sewer line.

The Area 1600 Motor Pool was identified as a Category 7 CERFA site. This CERFA site is a parcel where PSSCs were stored, and possibly released onto the site or to the environment, and/or were disposed of on site property. There have only been UST closure investigations recorded at the Area 1600 Motor Pool. The Area 1600 Motor Pool site lacks adequate documentation and, therefore, requires additional evaluation to determine the environmental condition of the parcel.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objective (DQO) process is followed to establish data requirements. This process ensures that the proper quantity and quality of data are generated to support the decision-making process associated with the action selection for the Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7). This section incorporates the components of the DQO process described in the publication EPA 540-R-93-071 *Data Quality Objectives Process for Superfund* (EPA, 1993). The DQO process as applied to the Area 1600 Motor Pool site is described in more detail in Section 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples, and the procedures necessary to meet the objectives of the SI and establish a basis for future action at this site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SSFP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The available data, presented in Table 3-1, related to the SI at the Area 1600 Motor Pool site have been used to formulate a site-specific conceptual model. This conceptual model was developed to support the development of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for the data and information generated during field activities are primarily EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide the level of defensible data and information required to confirm or rule out the existence of residual chemical contamination in site media.

Table 3-1

Summary of Data Quality Objectives
Site Investigation
Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7)
Fort McClellan, Calhoun County, Alabama

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA, ADEM USACE, DOD FTMC, IT Corporation Other contractors, and possible future land users	Limited UST closure data	Contaminant Source Area 1600 Motor Pool Migration Pathways Infiltration to subsurface soil, infiltration and leaching to groundwater, dust emissions and volatilization to ambient air, and runoff and erosion to surface water and sediment Potential Receptors Groundskeepers (current and future) construction workers (future), and residents (future) PSSC Petroleum products (e.g., gasoline, diesel, heating oil, waste oil, fog oil, antifreeze, and lubricants), solvents, and metals	Surface soil Subsurface Soil Groundwater Surface Water Sediment Depositional Soil	SI to confirm the presence or absence of contamination in the site media Definitive quality data for future decision-making	Surface soil TCL VOCs, TCL SVOCs, TAL Metals	Definitive data in CESAS Level B data packages	29 direct-push soil samples + QC
					Subsurface Soil TCL VOCs, TCL SVOCs, TAL Metals	Definitive data in CESAS Level B data packages	29 direct-push soil samples + QC
					Groundwater TCL VOCs, TCL SVOCs, TAL Metals	Definitive data in CESAS Level B data packages	14 groundwater samples + QC
					Surface Water TCL VOCs, TCL SVOCs, TAL Metals	Definitive data in CESAS Level B data packages	2 surface water samples + QC
					Sediment TCL VOCs, TCL SVOCs, TAL Metals, TOC, and Grain Size	Definitive data in CESAS Level B data packages	2 sediment samples + QC
					Depositional Soil TCL VOCs, TCL SVOCs, TAL Metals	Definitive data in CESAS Level B data packages	2 depositional soil samples + QC

ADEM - Alabama Department of Environmental Management.
CESAS - Corps of Engineers South Atlantic Savannah.
DOD - U.S. Department of Defense.
EPA - U.S. Environmental Protection Agency.
FTMC - Fort McClellan.
QC - Quality control.
SI - Site inspection.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target Compound list.
TOC - Total organic carbon.
USACE - U.S. Army Corps of Engineers.
UST - Underground storage tank.
VOC - Volatile organic compound.

3.3 Conceptual Site Exposure Model

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating potential risks to human health in the risk assessment. The CSEM includes receptors and potential exposure pathways appropriate to all plausible scenarios. The CSEM facilitates consistent and comprehensive evaluation of risk to human health through graphically presenting all possible exposure pathways, including sources, release and transport pathways, and exposure routes. In addition, the CSEM helps to ensure that potential pathways are not overlooked. The elements of a complete exposure pathway and CSEM are:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact scenarios with a contaminated source medium.

Primary contaminant releases were probably limited to leaks and spills that entered surface soil. Significant potential contaminant transport pathways include infiltration to subsurface soil, infiltration and leaching to groundwater, dust emissions and volatilization to ambient air, and surface water runoff and erosion to surface water and sediment.

Future land use in this area is unclear, but is likely industrial or commercial (FTMC, 1997). Also, it may not be deemed safe for public access until remediation has been completed because of the potential for UXO (USACE, 1998). Plausible human health receptor scenarios addressed in the CSEM include:

- The resident scenario, although unlikely, is considered for future purposes only, because there are not any residents present at the site and the likely future use is unclear.

- The groundskeeper scenario is considered for both current and future purposes, as the area is currently maintained, and will probably be maintained in the future.

- The construction worker scenario is considered for future purposes only, because the site is currently not under construction, but could undergo construction in preparing for, or during, future use(s) under the anticipated industrial or commercial site usage.

Human health receptor scenarios excluded from the CSEM include:

- The recreational site user scenario is not considered for future purposes because the site does not contain any open areas and the reuse is unclear.
- The venison consumption scenario is not considered for future purposes because the site could not support hunting.
- The fish consumption scenario is not considered since there is not any surface water on the site to support fishing activities.

A summary of relevant contaminant release and transport mechanisms, source and exposure media, and receptors and exposure pathways for this site is provided in Table 3-1 and Figure 3-1.

3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Section 4.3 of the WP and will be followed during the SI at the Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7). Data uses and needs are summarized in Table 3-1.

3.4.1 Risk Evaluation

Confirmation of contamination at the Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7), will be based on comparing detected site chemicals of potential concern to site-specific screening levels developed in the WP. EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria are exceeded in site media. Definitive data will be adequate for confirming the presence of site contamination and for supporting a feasibility study and risk assessment.

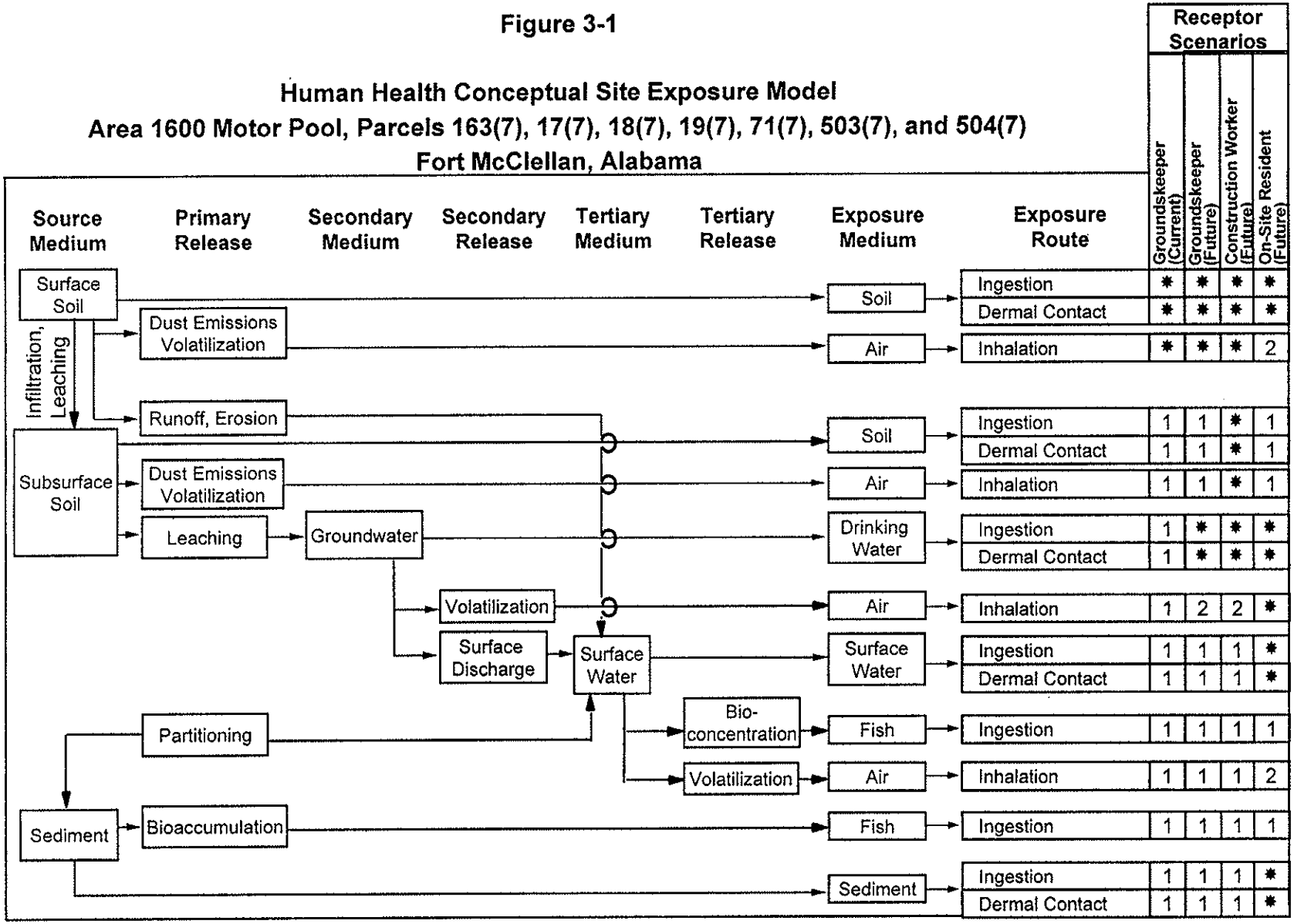
Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in accordance with the procedures in the WP.

3.4.2 Data Types and Quality

Surface soil, subsurface soil, groundwater, surface water, sediment, and depositional soil samples will be sampled and analyzed to meet the objectives of the SI at the Area 1600 Motor Pool. Quality assurance/quality control (QA/QC) samples will be collected for all sample types as

Figure 3-1

Human Health Conceptual Site Exposure Model
Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7)
Fort McClellan, Alabama



* = Complete exposure pathway evaluated in baseline risk assessment.

1 = Incomplete exposure pathway.

2 = Although theoretically complete, this pathway is judged to be insignificant.

described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 Methods Update III, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Section 9.0 of the QAP.

4.0 Field Activities

4.1 UXO Survey Requirements and Utility Clearances

The Area 1600 Motor Pool site falls within the "Possible Explosive Ordnance Impact Area" shown on Plate 10 of the FTMC archive search report maps (USACE, 1998). Therefore, IT will conduct UXO avoidance activities, including surface sweeps and downhole surveys of soil borings.

4.1.1 Surface UXO Survey

A UXO sweep will be conducted over areas that will be included in the sampling and surveying activities to identify UXO on or near the surface that may present a hazard to on-site workers during field activities. Low-sensitivity magnetometers will be used to locate surface and shallow-buried metal objects. UXO located on the surface will be identified and conspicuously marked for each avoidance. Subsurface metallic anomalies will not be disturbed, and will also be marked for easy avoidance. UXO personnel requirements, procedures, and detailed descriptions of the geophysical equipment to be used are provided in Chapter 4.0 and Appendices D and E of the approved SAP (IT, 1998a).

4.1.2 Downhole UXO Survey

During the soil boring and downhole sampling, downhole UXO surveys will be performed to determine if buried metallic objects are present. UXO monitoring, as described in Chapter 4.0 of the SAP (IT, 1998a), will continue until undisturbed soils are encountered or the borehole has been advanced to 12 feet bgs, whichever is reached first.

4.1.3 Utility Clearances

After the UXO surface survey has cleared the area to be sampled and prior to performing any intrusive sampling, a utility clearance will be performed at locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP (IT, 1998a). The site manager will mark the proposed locations with stakes, coordinate with the FTMC installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are approved (for both UXO and utility avoidance) for intrusive sampling, the stakes will be labeled as cleared.

4.2 Environmental Sampling

The environmental sampling program at the Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7) site includes the collection of surface soil, subsurface soil, groundwater, surface water, sediment, and depositional soil samples for chemical analyses. These samples will be collected and analyzed to provide data for characterizing the site to determine the environmental condition of the site and any further action to be conducted at the site.

4.2.1 Surface Soil Sampling

Surface soil samples will be collected from 29 soil locations at the Area 1600 Motor Pool site.

4.2.1.1 Sample Locations and Rationale

The surface soil sampling rationale are listed in Table 4-1. Proposed sampling locations are shown in Figure 4-1. Surface soil sample designations and required QA/QC sample requirements are summarized in Table 4-2. The final soil boring sampling locations will be determined in the field by the on-site geologist, based on actual field conditions.

4.2.1.2 Sample Collection

Surface soil samples will be collected from the upper 1 foot of soil by direct-push methodology as specified in Section 4.7.1.1 of the SAP (IT, 1998a). Collected soil samples will be screened using a photoionization detector (PID) in accordance with Section 4.15 of the SAP. Surface soil samples will be screened for information purposes only, and not to select samples for analysis. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.2 Subsurface Soil Sampling

Subsurface soil samples will be collected from the 29 soil borings installed at the Area 1600 Motor Pool site.

4.2.2.1 Sample Locations and Rationale

Subsurface soil samples will be collected from the soil borings proposed on Figure 4-1. The subsurface soil sampling rationale is listed in Table 4-1. Subsurface soil samples to be collected

DRAFT, CHCK. BY:
ENGR. CHCK. BY: J. RAGSDALE
INITIATOR: J. RAGSDALE
PROJ. MGR.: J. YACOUB
DRAWN BY: D. BILLINGSLEY
STARTING DATE: 05/25/99
DRAWN BY:
DATE LAST REV.: 30 SEP 1999 11:22:58
DWG. NO.: ...\774645es.288
PROJ. NO.: 774645
c:\cadd\design\774645es.288
c:\umin

N 1,165,600
N 1,165,200
N 1,164,800
E 673,200
E 673,700
E 674,200
1602
PARCEL 19(7)
PARCEL 71(7)
PARCEL 17(7)
PARCEL 18(7)
PARCEL 503(7)
PARCEL 504(7)
PARCEL 163(7)
8 TH AVENUE
10 TH AVENUE
ROCK HOLLOW ROAD
SOUTH BRANCH CREEK
GRAVEL
MOTOR POOL
GRAVEL AREA
GRASS
GATE
WASH RACK
LOADING RAMP
1690
1693
VEHICLE LIFT RACK
PROBABLE UST EXCAVATION
SUSPECTED REMOVAL LOCATION OF BUILDING 1693 UST
SUSPECTED REMOVAL LOCATION OF BUILDING 1689 UST
PROBABLE BUILDING 1694 LOCATION
OIL/WATER SEPARATOR
CONCRETE FOUNDATION
CONCRETE SLAB- PROBABLE 1699 STORAGE AREA (FOG OIL STORAGE)
COAL STORAGE BINS
T-1689
T-1643
T-1644
T-1645
T-1696
T-1697
T-1698
T-1617
FTA-163-GP01
FTA-163-GP02
FTA-163-GP03
FTA-163-GP04
FTA-163-GP05
FTA-163-GP06
FTA-163-GP07
FTA-163-GP08
FTA-163-GP09
FTA-163-GP10
FTA-163-GP11
FTA-163-GP12
FTA-163-GP13
FTA-163-GP14
FTA-163-GP15
FTA-163-GP16
FTA-163-GP17
FTA-163-GP18
FTA-163-GP19
FTA-163-MW01
FTA-163-MW02
FTA-163-MW03
FTA-163-MW04
FTA-163-MW05
FTA-163-MW06
FTA-163-MW07
FTA-163-MW08
FTA-163-MW09
FTA-163-MW10
FTA-163-MW11
FTA-163-MW12
FTA-163-MW13
FTA-163-MW14
FTA-163-SW/SD01
FTA-163-SW/SD02
FTA-163-DEP01
FTA-163-DEP02

LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS
- TREES / TREELINE
- PARCEL BOUNDARY
- SURFACE DRAINAGE / CREEK
- MANMADE SURFACE DRAINAGE FEATURE
- FENCE
- UTILITY POLE
- SANITARY SEWER LINE
- STORM DRAINAGE LINE
- DRAINAGE GRATE
- MANHOLE
- PROPOSED PERMANENT RESIDUUM MONITORING WELL
- PROPOSED SURFACE WATER/SEDIMENT SAMPLE
- PROPOSED SURFACE AND SUBSURFACE SOIL SAMPLE
- PROPOSED GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE
- PROPOSED DEPOSITIONAL SOIL SAMPLE

SCALE
0 120 240 FEET

FIGURE 4-1
PROPOSED SAMPLE LOCATIONS
AREA 1600 MOTOR POOL
PARCELS 163(7), 17(7), 18(7), 19(7), 71(7), 503(7) AND 504(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

IT CORPORATION
A Member of The IT Group

Table 4-1

Sampling Locations And Rationale
Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Media	Sample Location Rationale
FTA-163-GP01	Surface soil and subsurface soil	Soil boring for surface and subsurface soil samples to be placed on the north side of Washrack 1645. Sample data will indicate if contaminant releases into the environment have occurred from use of this facility and if contaminated soil exists at this site.
FTA-163-GP02	Surface soil and subsurface soil	Soil boring for surface and subsurface soil samples to be placed on the east side of Grease Rack 1644. Sample data will indicate if contaminant releases into the environment have occurred from use of this facility and if contaminated soil exists at this site.
FTA-163-GP03	Surface soil and subsurface soil	Soil boring for surface and subsurface soil samples to be placed on the southwest side of the closed-in-place UST at Building 1696. Sample data will indicate if contaminant releases into the environment have occurred from this UST and if contaminated soil exists at this site.
FTA-163-GP04	Surface soil and subsurface soil	Soil boring for surface and subsurface soil samples to be placed on the south end side of the closed-in-place UST at Building 1697. Sample data will indicate if contaminant releases into the environment have occurred from this UST and if contaminated soil exists at this site.
FTA-163-GP05	Surface soil and subsurface soil	Soil boring for surface and subsurface soil samples to be placed on the southwest side of the Building 1617 and the storm drain line. Sample data will indicate if contaminant releases into the environment have occurred from use of this facility and the storm drain line and if contaminated soil exists at this site.
FTA-163-GP06	Surface soil and subsurface soil	Soil boring for surface and subsurface soil samples to be placed on the southeast side of the suspected UST excavation at Building 1694. Sample data will indicate if contaminant releases into the environment have occurred from this suspected UST removal site and if contaminated soil exists at this site.
FTA-163-GP07	Surface soil and subsurface soil	Soil boring for surface and subsurface soil samples to be placed on the west side of the suspected UST excavation at Building 1694. Sample data will indicate if contaminant releases into the environment have occurred from this suspected UST removal site and if contaminated soil exists at this site.
FTA-163-GP08	Surface soil and subsurface soil	Soil boring for surface and subsurface soil samples to be placed through the center of the concrete slab at probable location of fog oil in Open Storage Area 1699. Sample data will indicate if contaminant releases into the environment have occurred from use of this facility and if contaminated soil exists at this site.
FTA-163-GP09	Surface soil and subsurface soil	Soil boring for surface and subsurface soil samples to be placed on the south side of the washrack, north of Open Storage Area 1699. Sample data will indicate if contaminant releases into the environment have occurred from use of these facilities and if contaminated soil exists at this site.
FTA-163-GP10	Surface soil and subsurface soil	Soil boring for surface and subsurface soil samples to be placed between vehicle lift rack and suspected removal location of Building 1689 UST. Sample data will indicate if contaminant releases into the environment have occurred from use of these facilities and the suspected UST removal site and if contaminated soil exists at this site.
FTA-163-GP11	Surface soil and subsurface soil	Soil boring for surface and subsurface soil samples to be placed at the northwest end of the vehicle lift rack between Buildings 1689 and 1693. Sample data will indicate if contaminant releases into the environment have occurred from use of these facilities and the suspected UST removal site and if contaminated soil exists at this site.
FTA-163-GP12	Surface soil and subsurface soil	Soil boring for surface and subsurface soil samples to be placed at the west side of the suspected removal location of Building 1693 UST. Sample data will indicate if contaminant releases into the environment have occurred from use of these facilities and the suspected UST removal site and if contaminated soil exists at this site.
FTA-163-GP13	Surface soil and subsurface soil	Soil boring for surface soil and subsurface soil samples to be placed on the northwest side of the Grease Rack 1643. Sample data will indicate if contaminant releases into the environment have occurred from use of this facility and if contaminated soil exists at this site.
FTA-163-GP14	Surface soil and subsurface soil	Soil boring for surface soil and subsurface soil samples to be placed on the southwest of the washrack south of Building 1690. Sample data will indicate if contaminant releases into the environment have occurred from use of this facility and if contaminated soil exists at this site.
FTA-163-GP15	Surface soil and subsurface soil	Soil boring for surface soil and subsurface soil samples to be placed on the entrance side of the Building 1697. Sample data will indicate if contaminant releases into the environment have occurred from the use of this building and if contaminated soil exists at this site.
FTA-163-GP16	Surface soil and subsurface soil	Soil boring for surface soil and subsurface soil samples to be placed on the entrance side of the Building 1696. Sample data will indicate if contaminant releases into the environment have occurred from the use of this building and if contaminated soil exists at this site.
FTA-163-GP17	Surface soil and subsurface soil	Soil boring for surface soil and subsurface soil samples to be placed on the entrance side of the Building 1617. Sample data will indicate if contaminant releases into the environment have occurred from the use of this building and if contaminated soil exists at this site.
FTA-163-GP18	Surface soil and subsurface soil	Soil boring for surface soil and subsurface soil samples to be placed on the entrance side of the Building 1693. Sample data will indicate if contaminant releases into the environment have occurred from the use of this building and if contaminated soil exists at this site.

Table 4-1

Sampling Locations And Rationale
Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Media	Sample Location Rationale
FTA-163-GP19	Surface soil and subsurface soil	Soil boring for surface soil and subsurface soil samples to be placed on the entrance side of the Building 1698. Sample data will indicate if contaminant releases into the environment have occurred from the use of this building and if contaminated soil exists at this site.
FTA-163-MW01	Surface soil, subsurface soil, and groundwater	Soil boring for surface soil, subsurface soil, and groundwater samples to be placed at the east corner of Washrack 1645. Sample data will indicate if contaminant releases into the environment have occurred from use of this washrack and if contaminated soil exists at this site. The monitoring well location will be used to establish a local groundwater flow direction and site-specific geology, and provide information on groundwater quality in the residuum aquifer.
FTA-163-MW02	Surface soil, subsurface soil, and groundwater	Soil boring for surface soil, subsurface soil, and groundwater samples to be placed at the south corner of the Washrack 1645 area. Sample data will indicate if contaminant releases into the environment have occurred from use of this washrack and if contaminated soil exists at this site. The monitoring well location will be used to establish a local groundwater flow direction and site-specific geology, and provide information on groundwater quality in the residuum aquifer.
FTA-163-MW03	Surface soil, subsurface soil, and groundwater	Soil boring for surface soil, subsurface soil, and groundwater samples to be placed at the southwest end of the Washrack 1643 and Grease Rack 1644 area. Sample data will indicate if contaminant releases into the environment have occurred from use of this washrack and grease rack and if contaminated soil exists at this site. The monitoring well location will be used to establish a local groundwater flow direction and site-specific geology, and provide information on groundwater quality in the residuum aquifer.
FTA-163-MW04	Surface soil, subsurface soil, and groundwater	Soil boring for surface soil, subsurface soil, and groundwater samples to be placed at the southwest end Building 1696 and southwest of the waste oil UST closed in place. Sample data will indicate if contaminant releases into the environment have occurred from this UST and if contaminated soil exists at this location. The monitoring well location will be used to establish a local groundwater flow direction and site-specific geology, and provide information on groundwater quality in the residuum aquifer.
FTA-163-MW05	Surface soil, subsurface soil, and groundwater	Soil boring for surface soil, subsurface soil, and groundwater samples to be placed at the southwest of the UST closed in place at Building 1697. Sample data will indicate if contaminant releases into the environment have occurred from this UST and if contaminated soil exists at this location. The monitoring well location will be used to establish a local groundwater flow direction and site-specific geology, and provide information on groundwater quality in the residuum aquifer.
FTA-163-MW06	Surface soil, subsurface soil, and groundwater	Soil boring for surface soil, subsurface soil, and groundwater samples to be placed on the southwest side (downgradient) of the sewer line north of Building 1617. Sample data will indicate if contaminant releases into the environment have occurred from use of the storm drain line and if contaminated soil exists in this area. The monitoring well location will be used to establish a local groundwater flow direction and site-specific geology, and provide information on groundwater quality in the residuum aquifer.
FTA-163-MW07	Surface soil, subsurface soil, and groundwater	Soil boring for surface soil, subsurface soil, and groundwater samples to be placed on the southwest side (downgradient) of the sewer line north of Building 1617. Sample data will indicate if contaminant releases into the environment have occurred from use of the storm drain line and if contaminated soil exists in this area. The monitoring well location will be used to establish a local groundwater flow direction and site-specific geology, and provide information on groundwater quality in the residuum aquifer.
FTA-163-MW08	Surface soil, subsurface soil, and groundwater	Soil boring for surface soil, subsurface soil, and groundwater samples to be placed at the southern end of the suspected UST excavation at Building 1694. Sample data will indicate if contaminant releases into the environment have occurred from this suspected UST removal site and if contaminated soil exists at this location. The monitoring well location will be used to establish a local groundwater flow direction and site-specific geology, and provide information on groundwater quality in the residuum aquifer.
FTA-163-MW09	Surface soil, subsurface soil, and groundwater	Soil boring for surface soil, subsurface soil, and groundwater samples to be placed at the southern corner of Building 1689 where USTs were reported removed. Sample data will indicate if contaminant releases into the environment have occurred from this suspected UST removal site and if contaminated soil exists at this location. The monitoring well location will be used to establish a local groundwater flow direction and site-specific geology, and provide information on groundwater quality in the residuum aquifer.
FTA-163-MW10	Surface soil, subsurface soil, and groundwater	Sample location for surface soil, subsurface soil and groundwater samples to be placed at the south end of the suspected removal location of Building 1693 UST. Sample data will indicate if contaminate releases into the environment have occurred from use of these facilities and the suspected UST removal sites and if contaminate soil exists at this site. The monitoring well will provide information on groundwater flow direction and groundwater quality in the residuum aquifer.
FTA-163-MW11	Groundwater	This monitoring well will be installed southeast of the Building 1698. Sample data will indicate if contaminant releases have occurred to surrounding soils from the utilization of the surrounding facilities. The monitoring well location will be used to establish a local groundwater flow direction and site-specific geology, and provide information on groundwater quality in the residuum aquifer.

Table 4-1

Sampling Locations And Rationale
Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Media	Sample Location Rationale
FTA-163-MW12	Groundwater	This monitoring well will be installed southwest of the Open Storage Area 1699. Sample data will indicate if contaminant releases have occurred to surrounding soils from the utilization of the surrounding facilities. The monitoring well location will be used to establish a local groundwater flow direction and site-specific geology, and provide information on groundwater quality in the residuum aquifer.
FTA-163-MW13	Groundwater	This monitoring well will be installed east of Buildings 1689 and 1693. Sample data will indicate if contaminant releases have occurred to surrounding soils from the utilization of the surrounding facilities. The monitoring well location will be used to establish a local groundwater flow direction and site-specific geology, and provide information on groundwater quality in the residuum aquifer.
FTA-163-MW14	Groundwater	This monitoring well will be installed southwest of probable UST excavation (Parcel 19[7]). Sample data will indicate if contaminant releases have occurred to surrounding soil from the UST location. The monitoring well will be used to establish a local groundwater flow direction and site-specific geology, and to provide information on groundwater quality in the residuum aquifer.
FTA-163-DEP01	Depositional soil	Sample location is the drainage area on southeast edge of the site northeast of Building 1698. Sample data will indicate if contaminant releases have occurred from runoff from the surrounding area of the Area 1600 Motor Pool.
FTA-163-DEP02	Depositional soil	Sample location is the drainage area on southeast edge of the site northeast of the Open Storage Area 1699. Sample data will indicate if contaminant releases have occurred from runoff from the surrounding area of the Area 1600 Motor Pool.
FTA-163-SW/SD01	Surface water and sediment	Sample location is the intermittent stream north of Building 1696. Sample data will indicate if contaminant releases have occurred from runoff from the facilities in the Area 1600 Motor Pool to the intermittent stream that flows southwest to South Branch of Cane Creek.
FTA-163-SW/SD02	Surface water and sediment	Sample location is the intermittent stream south of Building 1696. Sample data will indicate if contaminant releases have occurred from runoff from the facilities in the Area 1600 Motor Pool to the intermittent stream that flows southwest to South Branch of Cane Creek.

Table 4-2

Surface Soil, Subsurface Soil, and Depositional Soil Sample Designations and QA/QC Sample Quantities
Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7) and 504(7)

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-163-GP01	FTA-163-GP01-SS-CD0001-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-GP01-DS-CD0002-REG	a				
FTA-163-GP02	FTA-163-GP02-SS-CD0003-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-GP02-D2-CD0004-REG	a				
FTA-163-GP03	FTA-163-GP03-SS-CD0005-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-GP03-DS-CD0006-REG	a				
FTA-163-GP04	FTA-163-GP04-SS-CD0007-REG	0-1	FTA-163-GP04-SS-CD0008-FD	FTA-163-GP04-SS-CD0009-FS		TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-GP04-DS-CD0010-REG	a				
FTA-163-GP05	FTA-163-GP05-SS-CD0011-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-GP05-DS-CD0012-REG	a				
FTA-163-GP06	FTA-163-GP06-SS-CD0013-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-GP06-DS-CD0014-REG	a				
FTA-163-GP07	FTA-163-GP07-SS-CD0015-REG	0-1	FTA-163-GP07-SS-CD0016-FD			TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-GP07-DS-CD0017-REG	a				
FTA-163-GP08	FTA-163-GP08-SS-CD0018-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-GP08-DS-CD0019-REG	a				
FTA-163-GP09	FTA-163-GP09-SS-CD0020-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-GP09-DS-CD0021-REG	a			FTA-163-GP09-DS-CD0021-MS/MSD	
FTA-163-GP10	FTA-163-GP10-SS-CD0022-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-GP10-DS-CD0023-REG	a				
FTA-163-GP11	FTA-163-GP11-SS-CD0024-REG	0-1	FTA-163-GP11-SS-CD0025-FD			TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-GP11-DS-CD0026-REG	a				

Table 4-2

Surface Soil, Subsurface Soil, and Depositional Soil Sample Designations and QA/QC Sample Quantities
Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7) and 504(7)

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-163-GP12	FTA-163-GP12-SS-CD0027-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-GP12-DS-CD0028-REG	a				
FTA-163-GP13	FTA-163-GP13-SS-CD0029-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-GP13-DS-CD0030-REG	a			FTA-163-GP13-DS-CD0030-MS/MSD	
FTA-163-GP14	FTA-163-GP14-SS-CD0031-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-GP14-DS-CD0032-REG	a				
FTA-163-GP15	FTA-163-GP15-SS-CD0033-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-GP15-DS-CD0034-REG	a				
FTA-163-GP16	FTA-163-GP16-SS-CD0035-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-GP16-DS-CD0036-REG	a				
FTA-163-GP17	FTA-163-GP17-SS-CD0037-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-GP17-DS-CD0038-REG	a				
FTA-163-GP18	FTA-163-GP18-SS-CD0039-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-GP18-DS-CD0040-REG	a				
FTA-163-GP19	FTA-163-GP19-SS-CD0041-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-GP19-DS-CD0042-REG	a	FTA-163-GP19-DS-CD0043-FD	FTA-163-GP19-DS-CD0044-FS		
FTA-163-MW01	FTA-163-MW01-SS-CD0045-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-MW01-DS-CD0046-REG	a				
FTA-163-MW02	FTA-163-MW02-SS-CD0047-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-MW02-DS-CD0048-REG	a	FTA-163-MW02-DS-CD0049-FD	FTA-163-MW02-DS-CD0050-FS		
FTA-163-MW03	FTA-163-MW03-SS-CD0051-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-MW03-DS-CD0052-REG	a				
FTA-163-MW04	FTA-163-MW04-SS-CD0053-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-MW04-DS-CD0054-REG	a			FTA-163-MW04-DS-CD0054-MS/MSD	

Table 4-2

Surface Soil, Subsurface Soil, and Depositional Soil Sample Designations and QA/QC Sample Quantities
Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7) and 504(7)

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-163-MW05	FTA-163-MW05-SS-CD0055-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-MW05-DS-CD0056-REG	a				
FTA-163-MW06	FTA-163-MW06-SS-CD0057-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-MW06-DS-CD0058-REG	a				
FTA-163-MW07	FTA-163-MW07-SS-CD0059-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-MW07-DS-CD0060-REG	a				
FTA-163-MW08	FTA-163-MW08-SS-CD0061-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-MW08-DS-CD0062-REG	a	FTA-163-MW08-DS-CD0063-FD			
FTA-163-MW09	FTA-163-MW09-SS-CD0064-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-MW09-DS-CD0065-REG	a				
FTA-163-MW10	FTA-163-MW10-SS-CD0066-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-163-MW10-DS-CD0067-REG	a				
FTA-163-DEP01	FTA-163-DEP01-DEP-CD0068-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
FTA-163-DEP02	FTA-163-DEP02-DEP-CD0069-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals

[a] Actual sample depth selected for analysis will be at the discretion of the site geologist and will be based on field observation.

FD - Field duplicate.
FS - Field split.
MS/MSD - Matrix spike/matrix spike duplicate.
QA/QC - Quality assurance/quality control.
REG - Field sample.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target compound list.
VOC - Volatile organic compound.

are listed in Table 4-2. The final soil boring sampling locations will be determined in the field by the on-site geologist, based on actual field observations and utility clearance results.

4.2.2.2 Sample Collection

Subsurface soil samples will be collected from soil borings at a depth greater than 1 foot bgs in the unsaturated zone. The soil borings will be advanced and soil samples collected using the direct-push sampling procedures specified in Section 4.7.1.1 of the SAP (IT, 1998a).

Soil samples will be collected continuously for the first 12 feet or until either groundwater or refusal is reached. A detailed lithogical log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected for analyses. The collected subsurface soil samples will be field-screened using a PID in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings exceeding background (readings in ambient air). Typically, the subsurface soil sample showing the highest reading (above background) will be selected and sent to the laboratory for analysis. If none of the samples indicate readings exceeding background using the PID, the deepest interval from the soil boring will be sampled and submitted to the laboratory for analyses. Subsurface soil samples will be selected for analyses from any depth interval if the on-site geologist suspects PSSCs at the interval. Site conditions such as lithology may also determine the actual sample depth interval submitted for analyses. More than one subsurface soil sample will be collected if field measurements and observations indicate a possible layer of PSSCs and/or additional sample data would provide insight to the existence of any PSSCs.

Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.3 Permanent Residuum Monitoring Wells

Fourteen permanent residuum monitoring wells will be installed at the Area 1600 Motor Pool site. The permanent residuum monitoring well locations are shown on 4-1. The rationale for the monitoring well locations are presented in Table 4-1. The monitoring well boreholes will be drilled to the top of bedrock using a truck-mounted hollow-stem auger drill rig. Depth to bedrock is approximately 50 to 75 feet bgs at the site. The monitoring well casing will consist of

new 2-inch inside-diameter, Schedule 40, threaded, flush-joint, PVC pipe. Attached to the bottom of the well casing will be a section of new threaded, flush-joint, 0.010-inch continuous wrap PVC well screen, approximately 10 feet long. The well will be installed so the well screen straddles the water table.

Soil samples for lithology will be collected continuously every 5 feet to the total depth of the hole during hollow-stem auger drilling to provide a detailed lithologic log. The samples will be collected for lithology using a 24-inch-long, 2-inch-or-larger-diameter, split-spoon sampler. The soil borings will be logged in accordance with American Standard for Testing and Materials (ASTM) Method D 2488 using the Unified Soil Classification System. The soil samples will be screened in the field using a PID. There will not be any subsurface soil samples sent to the laboratory for analysis from three of the ten monitoring well boreholes. The monitoring wells will be drilled, installed, and developed as specified in Section 4.8 and Appendix C of the SAP (IT, 1998a). The exact monitoring well locations will be determined in the field by the on-site geologist, based on actual field conditions.

4.2.4 Groundwater Sampling

Groundwater samples will be collected from the fourteen monitoring wells completed at the Area 1600 Motor Pool is presented in Section 4.2.3.

4.2.4.1 Sample Locations and Rationale

Groundwater samples will be collected from the monitoring well locations shown on Figure 4-1. The groundwater sampling rationale is listed in Table 4-1. The groundwater sample designations, depths, and required QA/QC sample quantities are listed in Table 4-3.

4.2.4.2 Sample Collection

Prior to sampling monitoring wells, static water levels will be measured from each of the fourteen monitoring wells installed at the site to define the groundwater flow in the residuum aquifer. Water level measurements will be performed as outlined in Section 4.18 of the SAP (IT, 1998a). Groundwater samples will be collected in accordance with the procedures outlined in Section 4.9.1.4 of the SAP.

Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses

Table 4-3

Groundwater Sample Designations and QA/QC Sample Quantities
Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Matrix	Sample Depth (ft)	QA/QC Samples			Analytical Suite
				Field Duplicates	Field Splits	MS/MSD	
FTA-163-MW01	FTA-163-MW01-GW-CD3001-REG	Groundwater	a				TCL VOCs, TCL SVOCs, TAL Metals
FTA-163-MW02	FTA-163-MW02-GW-CD3002-REG	Groundwater	a				TCL VOCs, TCL SVOCs, TAL Metals
FTA-163-MW03	FTA-163-MW03-GW-CD3003-REG	Groundwater	a				TCL VOCs, TCL SVOCs, TAL Metals
FTA-163-MW04	FTA-163-MW04-GW-CD3004-REG	Groundwater	a				TCL VOCs, TCL SVOCs, TAL Metals
FTA-163-MW05	FTA-163-MW05-GW-CD3005-REG	Groundwater	a				TCL VOCs, TCL SVOCs, TAL Metals
FTA-163-MW06	FTA-163-MW06-GW-CD3006-REG	Groundwater	a				TCL VOCs, TCL SVOCs, TAL Metals
FTA-163-MW07	FTA-163-MW07-GW-CD3007-REG	Groundwater	a				TCL VOCs, TCLI SVOCs, TAL Metals
FTA-163-MW08	FTA-163-MW08-GW-CD3008-REG	Groundwater	a				TCL VOCs, TCL SVOCs, TAL Metals
FTA-163-MW09	FTA-163-MW09-GW-CD3009-REG	Groundwater	a				TCL VOCs, TCL SVOCs, TAL Metals
FTA-163-MW10	FTA-163-MW10-GW-CD3010-REG	Groundwater	a	FTA-163-GP10-GW-CD3011-FD			TCL VOCs, TCL SVOCs, TAL Metals
FTA-163-MW11	FTA-163-MW11-GW-CD3012-REG	Groundwater	a	FTA-163-MW11-GW-CD3013-FD	FTA-163-MW11-GW-CD3014-FS		TCL VOCs, TCL SVOCs, TAL Metals
FTA-163-MW12	FTA-163-MW12-GW-CD3015-REG	Groundwater	a			FTA-163-MW12-GW-CD3015-MS FTA-163-MW12-GW-CD3015-MSD	TCL VOCs, TCL SVOCs, TAL Metals
FTA-163-MW13	FTA-163-MW13-GW-CD3016-REG	Groundwater	a				TCL VOCs, TCL SVOCs, TAL Metals
FTA-163-MW14	FTA-163-MW14-GW-CD3017-REG	Groundwater	a				TCL VOCs, TCL SVOCs, TAL Metals

*Sample depth will depend on where sufficient first water is encountered to collect a water sample.

FD - Field duplicate.
FS - Field split.
MS/MSD - Matrix spike/matrix spike duplicate.
QA/QC - Quality assurance/quality control.
REG - Field sample.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target compound list.
VOC - Volatile organic compound.

required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP (IT, 1998a). The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.5 Depositional Soil Sampling

Two depositional soil samples will be collected at the Area 1600 Motor Pool site.

4.2.5.1 Sample Locations and Rationale

The depositional soil samples will be collected in the surface drainage features along the south-east edge of the Area 1600 Motor Pool site. The sampling rationale is listed in Table 4-1 and the proposed sampling locations are shown on Figure 4-1. The depositional soil sample designations, depth, and required QA/QC sample quantities are listed in Table 4-2. The actual depositional soil sample points will be at the discretion of the ecological sampler, based on the physical characteristics of the drainage area and actual field observations.

4.2.5.2 Sample Collection

The depositional soil sample collection will be conducted in accordance with the procedures for surface soil sample collection specified in Section 4.9.1.1 of the SAP (IT, 1998a). Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.6 Surface Water Sampling

Two surface water samples will be collected from the drainage ditch that flows through the Area 1600 Motor Pool near the southwest end of the site.

4.2.6.1 Sample Locations and Rationale

The surface water sampling rationale are listed in Table 4-1. The surface water samples will be collected from the proposed locations on Figure 4-1. The surface water sample designations and required QA/QC sample requirements are listed in Table 4-4. The exact sampling locations will be determined in the field by the ecological sampler, based on drainage pathways and actual field observations.

Table 4-4

Surface Water and Sediment Sample Designations and QA/QC Sample Quantities
Area 1600 Motor Pool , Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Matrix	Sample Depth (ft)	QA/QC Samples			Analytical Suite
				Field Duplicates	Field Splits	MS/MSD	
FTA-163-SW/SD01	FTA-163-SW/SD01-SW-CD2001-REG	Surface Water	N/A				TCL VOCs, TCL SVOCs, TAL Metals,
FTA-163-SW/SD01	FTA-163-SW/SD01-SD-CD1001-REG	Sediment	0-0.5				(TOC, Grain Size for sediment only)
FTA-163-SW/SD02	FTA-163-SW/SD02-SW-CD2002-REG	Surface Water	NA				TCL VOCs, TCL SVOCs, TAL Metals,
FTA-163-SW/SD02	FTA-163-SW/SD02-SD-CD1002-REG	Sediment	0-0.5				(TOC, Grain Size for sediment only)

MS/MSD - Matrix spike/matrix spike duplicate.
NA - Not applicable.
QA/QC - Quality assurance/quality control.
REG - Field sample.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target compound list.
TOC - Total organic carbon.
VOC - Volatile organic compound.

4.2.6.2 Sample Collection

The surface water samples will be collected in accordance with the procedures specified in Section 4.9.1.3 of the SAP (IT, 1998a). Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.7 Sediment Sampling

Two sediment samples will be collected from the Area 1600 Motor Pool. These sediment samples will be collected at the same locations as the surface water samples described in Section 4.2.6.

4.2.7.1 Sample Locations and Rationale

The proposed locations for the sediment samples are shown in Figure 4-1. Sediment sampling rationale is presented in Table 4-1. The sediment sample designation and required QA/QC sample requirements are listed in Table 4-4. The actual sediment sample points will be at the discretion of the ecological sampler, based on the drainage pathways and actual field observations.

4.2.7.2 Sample Collection

The sediment samples will be collected in accordance with the procedures specified in Section 4.9.1.2 of the SAP. Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. The sediment samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.3 Decontamination Requirements

Decontamination will be performed on sampling and nonsampling equipment to prevent cross-contamination between sampling locations. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP (IT, 1998a). Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

4.4 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the U.S. State Plane Coordinate System, Alabama East Zone, North American Datum (NAD83), 1983. Elevations will be referenced to the NGVD of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for soil, sediment, and surface water locations will be recorded using a GPS to provide accuracy within 1 meter. Because of the need to use permanent monitoring wells to determine water levels, a higher level of accuracy is required. Monitoring wells will be surveyed to an accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required. Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP. All areas at this site must be cleared for UXO avoidance before any surveying activities will commence.

4.5 Analytical Program

Samples collected at locations specified in this chapter of this SFSP will be analyzed for the specific suites of chemicals and elements based the history of site usage, as well as EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7), consist of the following list of analytical suites:

- Target Compound List Volatile Organic Compounds - Method 5035/8260B
- Target Compound List Semivolatile Organic Compounds - Method 8270C
- Target Analyte List Metals - Method 6010B/7000.

In addition, the sediment samples will be analyzed for the following list of parameters:

- Total Organic Carbon – Method 9060
- Grain Size – ASTM D-421/D-422.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-5 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the

Table 4-5

Analytical Samples
Site Investigation
Area 1600 Motor Pool , Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7)
Fort McClellan, Calhoun County, Alabama

				Field Samples			QA/QC Samples[a]					Quanterra	QA Lab
Parameters	Analysis Method	Sample Matrix	TAT Needed	No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (5%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	Total No. Analysis
Area 1600 Motor Pool: 16 water matrix samples (14 groundwater samples and 2 surface water samples); **62 soil matrix samples** (29 surface soil samples, 29 subsurface soil samples, 2 sediment samples, and 2 depositional soil samples)													
TCL VOCs	8260B	water	normal	16	1	16	2	1	1	3	1	24	1
TCL SVOCs	8270C	water	normal	16	1	16	2	1	1		1	21	1
Tot TAL Metals	6010B/7000	water	normal	16	1	16	2	1	1		1	21	1
TCL VOCs	8260B	soil	normal	62	1	62	6	3	3		1	75	3
TCL SVOCs	8270C	soil	normal	62	1	62	6	3	3		1	75	3
TAL Metals	6010B/7000	soil	normal	62	1	62	6	3	3		1	75	3
TOC	9060	sediment	normal	2	1	2						2	0
Grain Size	ASTM D-421/D-422	sediment	normal	2	1	2						2	0
			Area 1600 Motor Pool Subtotal:	238			24	12	12	3	6	295	12

[a]Field duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded to the nearest whole number.
Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed four field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than 1 week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

Ship samples to:

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Attn: John Reynolds
Tel: 423-588-6401
Fax: 423-584-4315

USACE Laboratory split samples are shipped to:

U.S. Army Engineer District, Savannah
Environmental & Materials District
Attn: Sample Receiving
200 North Cobb Parkway
Building 400, Suite 404
Marietta, Georgia 30062
Tel: 678-354-0310

MS/MSD - Matrix spike/matrix spike duplicate.
PCB - Polychlorinated biphenyl.
QA/QC - Quality assurance/quality control.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target compound list.
TOC - Total organic carbon.
VOC - Volatile organic compound.

stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

4.6 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow the procedures specified in Section 4.13.2 of the SAP (IT, 1998a). Completed analysis request/chain of custody records will be secured and included with each shipment of coolers to:

Attn: John Reynolds
Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Telephone: (423) 588-6401.

QA split samples collected for the USACE laboratory will be shipped to the following address:

U.S. Army Engineer District, Savannah
Environmental & Materials Unit
Attn: Sample Receiving
200 North Cobb Parkway
Building 400, Suite 404
Marietta, Georgia 30062
Telephone: (678) 354-0310.

4.7 Investigation-Derived Waste Management

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Appendix D of the SAP (IT, 1998a). The IDW expected to be generated at the Area 1600 Motor Pool site will include decontamination fluids and disposable personal protective equipment. The IDW will be staged in the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

4.8 Site-Specific Safety and Health

Health and safety requirements for this SI are provided in the SSHP attachment for the Area 1600 Motor Pool, Parcels 163(7), 17(7), 18(7), 19(7), 71(7), 503(7), and 504(7). The SSHP attachment will be used in conjunction with the installation-wide SHP.

5.0 Project Schedule

The project schedule for the SI activities will be provided by the IT project manager to the Base Realignment and Closure Cleanup Team and will be in accordance with the WP.

6.0 References

Braun Intertec Corporation (Braun) 1995a, ***UST Closure Report, Site Assessment Report, Fort McClellan Building 1696, Calhoun County, Fort McClellan, Alabama***, February.

Braun Intertec Corporation (Braun) 1995b, ***UST Closure Report, Site Assessment Report, Fort McClellan Building 1697, Calhoun County, Fort McClellan, Alabama***, February.

Environmental Science and Engineering, Inc. (ESE), 1998, ***Final Environmental Baseline Survey, Fort McClellan, Alabama***, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan (FTMC), 1997, ***Fort McClellan Comprehensive Reuse Plan***, Fort McClellan Reuse and Redevelopment Authority of Alabama, prepared under contract to the Calhoun County
Commission, November.

IT Corporation (IT), 1999, ***Final UST Summary Report, Fort McClellan, Calhoun County, Alabama***, April.

IT Corporation (IT), 1998a, ***Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama***, August.

IT Corporation (IT), 1998b, ***Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama***, August.

Stokes, Gary, U.S. Army Corps of Engineers (USACE), Mobile District, Fort McClellan Field Office, 1999, Telephone Communication with John Ragsdale, IT Corporation, June 9.

U.S. Army Corps of Engineers (USACE), 1999, ***Statement of Work for Task Order CK05, Modification No. 0005, Site Investigations at Fort McClellan, Alabama,*** January.

U.S. Army Corps of Engineers (USACE), 1998, ***Archives Search Report, Maps, Fort McClellan, Anniston, Alabama,*** June.

U.S. Army Corps of Engineers (USACE), 1994, ***Requirements for the Preparation of Sampling and Analysis Plan***, Engineer Manual EM 200-1-3, September 1.

U.S. Department of Agriculture (USDA), 1961, ***Soil Survey, Calhoun County, Alabama***, Soil Conservation Service, Series 1958, No. 9, September 1961.

U.S. Environmental Protection Agency (EPA), 1993, ***Data Quality Objectives Process for Superfund, Interim Final Guidance***, EPA 540-R-93-071, September.